

1ST AND 2ND ORDER										PROCESSES AND PROPERTIES INDEX										3RD AND 4TH ORDER									
<p>CO</p> <p>1</p> <p><i>Microscopic apparatus for study of mixtures of liquids. W. SWISTUNLAWSKY Roznichi Chem. 9, 908-13 (614 French) (1928).—See C. A. 24, 1. J. KUČKA</i></p>																													
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<p><i>co</i></p> <p>The heats of combustion of camphor, azobenzene and hydrazobenzene. W. SWIETOSLAWSKI AND J. BORKOWICZ. <i>Roczniki Chem.</i> 6, 723-30(730 French)(1920). - The heats of combustion of camphor, azobenzene and hydrazobenzene are in cal. per g. in air: 9200.7, 8483.8, 1024.3; in vacuum: 9248.7, 8477.0, 8017.4. The mol. heats of combustion, <math>\nu</math> const. (air): 1408.8, 1544.0, 1587.9. <math>\rho</math> const. (air): 1410.8, 1545.8, 1580.1; <math>\rho</math> const. (vacuum): 1409.0, 1544.0, 1587.8. W. A. Roth's opinion of the non-homogeneity of Lemault's data is confirmed (C. A. 20, 2445). J. K.</p>																										<p><i>2</i></p>																									
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Briquetting of coke and semicoke powders with coal as the binder. H. W. SWIETOSLAWSKI, H. ROKA AND M. CHORASY. *Przemysl Chem.* 13, 485 72(1920); cf. C. I. 23, 2012. The higher the coking properties of coal the better it acts as a binder. The nature of the semicoke, depending on whether it came from a coking or a non-coking coal, plays a minor but significant part in briquetting. A min. of 30% coal dust is necessary to produce mechanically strong briquets. The temp. to which the mixt. of coal dust with coke or semicoke dust must be heated before pressing varies between 380° and 440°, depending on the coal dust used as the binder. A pressure of 200-300 kg./sq. cm. is sufficient to produce good briquets. A résumé of over 37 patents on briquetting compiled from international sources is given. A. C. Z.

ASB. S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

CLASSIFICATION		PROCEDURE AND PROPERTIES INDEX		INDEX AND OTHER FEATURES	
Methods of ebullioscopic and tonometric research. W. ŚWIETOSŁAWSKI. Bull. intern. acad. polonaise 1929A, 434-90 (in French).—See C. A. 23, 3380.				J. WIENIAK	
<p><i>(Handwritten notes and classification details follow)</i></p>					

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A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ BA BB BC BD BE BF BG BH BI BJ BK BL BM BN BO BP BQ BR BS BT BU BV BW BX BY BZ CA CB CC CD CE CF CG CH CI CJ CK CL CM CN CO CP CQ CR CS CT CU CV CW CX CY CZ DA DB DC DD DE DF DG DH DI DJ DK DL DM DN DO DP DQ DR DS DT DU DV DW DX DY DZ EA EB EC ED EE EF EG EH EI EJ EK EL EM EN EO EP EQ ER ES ET EU EV EW EX EY EZ FA FB FC FD FE FF FG FH FI FJ FK FL FM FN FO FP FQ FR FS FT FU FV FW FX FY FZ GA GB GC GD GE GF GG GH GI GJ GK GL GM GN GO GP GQ GR GS GT GU GV GW GX GY GZ HA HB HC HD HE HF HG HH HI HJ HK HL HM HN HO HP HQ HR HS HT HU HV HW HX HY HZ IA IB IC ID IE IF IG IH II IJ IK IL IM IN IO IP IQ IR IS IT IU IV IW IX IY IZ JA JB JC JD JE JF JG JH JI JJ JK JL JM JN JO JP JQ JR JS JT JU JV JW JX JY JZ KA KB KC KD KE KF KG KH KI KJ KL KM KN KO KP KQ KR KS KT KU KV KW KX KY KZ LA LB LC LD LE LF LG LH LI LJ LK LL LM LN LO LP LQ LR LS LT LU LV LW LX LY LZ MA MB MC MD ME MF MG MH MI MJ MK ML MN MO MP MQ MR MS MT MU MV MW MX MY MZ NA NB NC ND NE NF NG NH NI NJ NK NL NO NP NQ NR NS NT NU NV NW NX NY NZ OA OB OC OD OE OF OG OH OI OJ OK OL OM ON OP OQ OR OS OT OU OV OW OX OY OZ PA PB PC PD PE PF PG PH PI PJ PK PL PM PN PO PP PQ PR PS PT PU PV PW PX PY PZ QA QB QC QD QE QF QG QH QI QJ QK QL QM QN QO QQ QR QS QT QU QV QW QX QY QZ RA RB RC RD RE RF RG RH RI RJ RK RL RM RN RO RP RQ RR RS RT RU RV RW RX RY RZ SA SB SC SD SE SF SG SH SI SJ SK SL SM SN SO SP SQ SR SS ST SU SV SW SX SY SZ TA TB TC TD TE TF TG TH TI TJ TK TL TM TN TO TP TQ TR TS TT TU TV TW TX TY TZ UA UB UC UD UE UF UG UH UI UJ UK UL UM UN UO UP UQ UR US UT UY UZ VA VB VC VD VE VF VG VH VI VJ VK VL VM VN VO VP VQ VR VS VT VU VW VX VY VZ WA WB WC WD WE WF WG WH WI WJ WK WL WM WN WO WP WQ WR WS WT WY WZ XA XB XC XD XE XF XG XH XI XJ XK XL XM XN XO XP XQ XR XS XT XU XV XW XX XY XZ YA YB YC YD YE YF YG YH YI YJ YK YL YM YN YO YP YQ YR YS YT YU YV YW YX YZ ZA ZB ZC ZD ZE ZF ZG ZH ZI ZJ ZK ZL ZM ZN ZO ZP ZQ ZR ZS ZT ZU ZV ZW ZX ZY ZZ																									
<p>Heat of combustion of camphor, azobenzene and hydrazobenzene. W. SWIRTOF, LAWRIE AND J. BOBINSKA. <i>Bull. intern. acad. Polonaise</i> 1929A, 621-30 (in French). See C. A. 24, 1700.</p> <p>J. WIHTELAK</p>																									
<p>ANALYSIS: METALLURGICAL LITERATURE CLASSIFICATION</p>																									

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PROCESSES AND PROPERTIES INDEX

Application of the differential ebullioscope for the study of azeotropic mixtures of ethyl alcohol and water. W. SWIRTOŃ-LAWSKI AND I. ZLOTOWSKI. *Rozniki Chem.* 10, 288 (1952) (3023 French); *Collection Czechoslov. Chem. Communications* 2, 315 (1953). A device composed of an ordinary and a differential ebullioscope was made for the study of azeotropism of mixts. of alc. and water. The variation of the boiling temps. with the compn. of the mixt. was examd. within the limits of water concn. of 0 to 7% under varying pressures from 760 to 1000 mm. Hg. Azeotropic concns. and depressions of the mixts. alc.-water were detd. for 6 pressures: 763, 1025, 1270, 1500, 1740 and 1900 mm. Hg. Tables were compiled contg. the differences between the b. ps. of alc. and of the mixts. alc.-water for these 6 pressures and tables contg. the differences between the b. ps. of abs. alc. and the mixts. alc.-water permitting the detn. of traces of water in anhyd. alc.

JANUARY KUCERA

ASACSLA METALLURGICAL LITERATURE CLASSIFICATION

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205. Rate of Evaporation of Liquids from a Heated Platinum Surface. W. Swietoslowski and S. Bakuwaki. *Acad. Polonaise Sci. et Lettres. Bull. 4a-6a. pp. 191-194, April-May, 1960. In English.*—Repeating (Mmo.) Blaszkowska-Zakrzewska's work (see preceding Abstract) with a cavity lined with platinum, the authors discover a temperature-range of metastability over which a liquid drop (e.g., alcohol-ether mixture) may take only 5 sec. or alternatively as long as 10-35 sec. to evaporate. The lower value corresponds to a maximum rate of evaporation and is constant over a wide range of temperature; the upper tends to fall slowly at higher temperatures. Thus over the range 210°-270° C. the spheroidal state may or may not be assumed, a result (peculiar to platinum) which the authors attribute to surface irregularities. L. V. C.

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

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<p>1956. Differential Ebullioscope with Fractionator. W. Swiatochowski. <i>Acad. Polonaise Sci. et Lettres, Bull.</i> 9-10. A. pp. 504-517, Nov.-Dec., 1956. -- The apparatus is intended to measure the difference between the temperature of ebullition and the temperature of condensation of a liquid, whether a simple compound or a constant-boiling mixture. Examples of results obtained with it are given, and modifications are also described which use only about 30 gm. and only 5 or 6 respectively. Methods of filling the apparatus receive particular attention, and its value in studying the purity of a liquid is emphasized and illustrated with examples.</p> <p style="text-align: right;">J. H. A.</p>																			
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OVER

Ca 71

MECHANICAL RESISTANCE OF COKE FROM UPPER SILESIA. W. SIKLITUSIAWSKI AND M. CHONASY. *Przemysl Chem.* 14, 183-204 (1930).—The usual drum test for the strength of coke was modified by periodically removing from the drum the smaller lumps produced by grinding, detg. the proportions of lumps (1) greater than 40 mm., (2) between 40 and 10 mm. and (3) smaller than 10 mm. The results are evaluated numerically by plotting the % of each size of lumps against the no. of revolutions of the drum, and measuring the areas under the curves. This method and the "shatter test" were applied to cokes from several Upper Silesian plants of various oven designs. The 2 methods gave concordant results. The modified drum test is, however, the more sensitive one for friable and easily crushable cokes, and is the better suited for cokes of Upper Silesia.

A. C. ZACHLIN

ASH-STA METALLURGICAL LITERATURE CLASSIFICATION

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3RD AND 4TH ORDERS

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1ST AND 2ND ORDERS
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3RD AND 4TH ORDERS

**Physicochemical researches on alcoholic mixtures. I. Introduction.** Wojciszca SWIATOSLAWSKI, *Przemysl Chem.* 14, 337-8 (1930).—Compn. by vol., sp. gr. and acidity of mixts. discussed in succeeding instalments are given. **II. The phenomenon of azeotropy in polycomponent mixtures.** *Ibid* 330-45.—Azeotropic mixts. of 2 and 3 components are considered theoretically. The component A that produces an azeotropic mixt. with other components B and B<sub>1</sub> is called an *azeotropizing agent*. The difference between the b. p. of component A and the b. p. of the mixt. producing max. vapor pressure is called the *azeotropic lowering* of the boiling temp. with respect to the component A (in the case of pos. azeotropy). In a series of binary mixts. of an azeotropizing agent A with B, B<sub>1</sub>, B<sub>2</sub>, . . . etc. (e. g., hydrocarbons) the concn. of A is greater the smaller the azeotropic lowering of the b. p. In such a series no ternary azeotropic mixt. such as B + B<sub>1</sub> + A is formed, but a series of binary azeotropic mixts. such as A + B, A + B<sub>1</sub>, . . . etc. are formed. The vol. of air-% liquid vaporized relationships were straight lines. The losses of liquid, in general, were greater the higher the vapor pressure. **VIII. Dependence of the temperature of clouding of the mixtures on the amount of added water.** W. SWIATOSLAWSKI, J. PRANMAURER AND B. BAKOWSKI. *Ibid* 497-501.—Clouding and sepn. into 2 phases of the alcoholic fuel mixts. was studied in the relation of temp. to the amt. of water added within the temp. limits of -23° to +30°. A modified form of Alexeyev app. was used. The mixt. PA became turbid the most easily (-18°). Temps. at which the other mixts. sepd. into 2 phases varied from -22.5° to -75°. **IX. Flash points, and burning temperatures of alcoholic fuel mixtures.** W. SWIATOSLAWSKI AND B. KARPINSKI. *Ibid* 501-3.—Abel's app. was used.

1ST AND 2ND ORDERS
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3RD AND 4TH ORDERS

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Measuring small temperature effects. W. SWINTOWSKI. *Chem. Listy* 24, 8-11(1930).—An adiabatic calorimeter is described by which small temp. effects are measured when the heat is evolved over a long period. The heat given off in minerals poor in radioactive elements can be measured. It is useful in biology for measuring the heat given off during biological oxidations. It cannot be used for the ordinary run of chemical reactions for the events pass through too rapidly. A modification of an *calorimeter* is also described.

FRANK MARSH

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

Remarks on the rate of evaporation of liquids from a heated platinum surface. W. SWISTOLAWSKI and S. BAKOWSKI. *Bull. Intern. Acad. Polonaise* 1930A, 191-4 (in English). The rate of evapn. of small liquid drops from heated Pt and other metal surfaces is compared. In the case of Al the results of Blaszkowska-Zakrzewska (cf. C. A. 23, 4415) are confirmed. In the case of Pt, however, a temp. interval exists above the temp. at which the time of evapn. attains a min., where simultaneously a very rapid and a very slow evapn. can take place. In this interval points of the slow evapn. lie on the prolongation of the time-temp. curve of the slow evapn. at high temps. The phenomenon is also observed in case of liquid mixts. and may be due to an uneven surface of the Pt dish or to foreign matter on its surface. J. WIETELAK

J. WIERTELAN

A S B . S L A DETALLPOGICAL LITERATURE CLASSIFICATION

Preparation of sulfonic derivatives of naphthoquinonechloroamines and naphthoquinonechlorodimines. W. SWINIOMLAWSKI, A. PILIT AND F. KRACKINWICK. *Bull. intern. acad. Polonaise* 1931, No. 2A, 148-57(1931) - See C. A. 25, 3331. G. G.

Thioquinols. LEONARD A. WARREN AND SAMUEL SMILES. *J. Chem. Soc.* 1931, 1192 G. -Thio derivs. of 2-C<sub>10</sub>H<sub>7</sub>OH of the general type 1,2-C<sub>10</sub>H<sub>4</sub>(OH)SAr (I) are converted by dil. HNO<sub>3</sub> into quinonitroles (II), 1,1,2-C<sub>10</sub>H<sub>4</sub>(SAr)(NO<sub>2</sub>):O. Under the action of heat in solvents the II decomp., yielding complex mixts.; the chief process involved is usually that of hydrolysis, leading to HNO<sub>2</sub> and the thioquinols (III), 1,1,2-ArS(HO)C<sub>10</sub>H<sub>4</sub>:O; these have not been isolated, the disulfides resulting from oxidation of the thiols liberated by fission of the III being obtained instead. Concurrently with hydrolysis, migration of the NO<sub>2</sub> group may occur, but the resulting NO<sub>2</sub> derivs. of I have been obtained in only 3 cases. A third type of decompn. (in presence of alkali) involves the removal of the thioaryl group, leaving 1,2-O<sub>2</sub>NC<sub>10</sub>H<sub>4</sub>OH. 2-Naphthyl 1-nitro-2-hydro-1,2-dihydro-1-naphthyl sulfide (II, Ar = 2-C<sub>10</sub>H<sub>7</sub>), m. 116° (decompn.), results from the sulfide (I, Ar = 2-C<sub>10</sub>H<sub>7</sub>) and 10% HNO<sub>3</sub> in AcOH; warming in AcOH at 80° gives (2-C<sub>10</sub>H<sub>7</sub>S)<sub>2</sub>; EtOH-NaOH gives 1,2-O<sub>2</sub>NC<sub>10</sub>H<sub>4</sub>OH. The *p*-tolyl deriv. (II, Ar = *p*-C<sub>6</sub>H<sub>4</sub>), m. 112° (decompn.); the *o*-nitrophenyl deriv. (II, Ar = *o*-O<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>), m. 105° (decompn.); warm AcOH decompn. this, giving *o*-nitrophenyl 1-nitro-2-hydroxy-1-naphthyl sulfide (IV), yellow, m. 192°. The *p*-nitrophenyl deriv., m. 116° (decompn.); warm AcOH gives the *p*-isomer of IV, yellow, m. 187°. 1-Nitro-2'-hydroxy-2-hydro-1,2-dihydrodi-1-naphthyl sulfide (V), from 2-naphthol 1-sulfide (VI), m. 116° (decompn.); warm AcOH gives dehydro-2-naphthol 1-disulfide. 2'-MeO deriv. of V, m. 105° (decompn.); 1'-AcO deriv., m. 103° (decompn.), prepd. from the Ac deriv. of VI, m. 164°; warm AcOH gives the di-Ac deriv. of 2-naphthol 1-disulfide. Shaking 2-naphthol 1-disulfide with Et<sub>2</sub>O and dil. H<sub>2</sub>SO<sub>4</sub> in the presence of NaNO<sub>2</sub> gives 1-nitro-2-hydro-2'-hydroxy-1,2-dihydrodi-1-naphthyl disulfide, m. 109° (decompn.); 2 N NaOH gives 1,2-O<sub>2</sub>NC<sub>10</sub>H<sub>4</sub>OH. Di-1-nitro-2-hydro-1,2-dihydro-1-naphthyl sulfide, m. 121° (decompn.); warm aq. NaOH gives a mixt. of Na salts. The corresponding disulfide, m. 124-7° (decompn.). 2-Naphthol isosulfide and 1 mol. HNO<sub>3</sub> give 93% of nitrodehydro-2-naphthol 1-sulfide; reaction of HNO<sub>3</sub> with the dehydro sulfide did not yield this nitration product.

C. J. Warr

A5B-11A METALLURGICAL LITERATURE CLASSIFICATION

E-2

2488. **Adiabatic Microcalorimeter to Determine Specific Heat of Solids and Liquids.** W. Swietoslawski, M. Rybicki and W. Soledkowska. *Acad. Polonaise Sci. et Lettres, Bull.* No. 4-54. pp. 322-335, April-May, 1931. *In French.*—Corrections for the heat necessary to heat the contained gas, for loss or gain of heat due to adsorption or vaporisation of water (or other liquid) by or from the walls of the apparatus, and for variation in the surrounding temperature, are deduced for the author's adiabatic calorimeter [see Abstract 389 (1928)], and a modified form described. This consists of the microcalorimeter proper, which is placed in a spherical glass or copper vessel, and the whole in a large receptacle filled with water maintained at constant temperature. The substance is heated electrically at a rate of 0.25-0.45° per hr. For determining specific heats two such calorimeters are used, one of silver or copper of known heat capacity, the other similar and containing the liquid under examination for liquids, but made of the metal concerned for a metal. Determined in this way the specific heat at 17° of aluminium is 0.214, of pyridine 0.409. (See following Abstract.) C. A. S.



2489. Measurement of Heats of Adsorption and Vaporisation with Adiabatic Calorimeter. W. Biskupski and (Miss) E. Bartoszewicz. *Acad. Polonaise Sci. et Lettres, Bull. No. 4-5A*, pp. 336-347, April-May, 1931. In French.—To avoid the effect of variations in the surrounding temperature the galvanometer and commutator are placed in the receptacle filled with water. With this and other modifications (fully described) the adiabatic microcalorimeter (see preceding Abstract) is used for determining heats of adsorption and vaporisation with only a few cgm. of liquid. The heats of vaporisation of  $H_2O$ ,  $C_6H_6$  and  $CHCl_3$  thus determined are 581, 98.2 and 66.8 cal. ( $\pm 0.3\%$ ); the molecular heats of adsorption on charcoal (prepared by the action of  $ZnCl_2$  on wood) of  $C_6H_6$ , EtOH and  $CCl_4$  are 14.4, 15.6, and 15.8 cal/mol. ( $\pm 0.6-1.7\%$ ) respectively, all at  $20^\circ$ .  
C. A. S.

10

Preparation of sulfonic derivatives of naphthoquinonechloroimines and naphthoquinonechlorodiimines. W. ŚWIETOMŁAWSKI, A. PILITZ AND P. KRACZKIEWICZ. *Rozprawy Chem.* 11, 40-48 (1931).—1,2,4- $C_{10}H_6(NH)(OH)SO_3H$  (I), when chlorinated in an aq. suspension with  $Cl_2$  water or gaseous  $Cl_2$ , yields the corresponding quinonechloroimine. The latter, reduced by gaseous  $SO_2$ , regenerates I in 45% yield. Similarly, I in a satd. soln. of  $AcOK$ , chlorinated at  $0^\circ$  with gaseous  $Cl_2$ , gives K 2-naphthoquinone-1-chloroimino-4-sulfonate,  $C_{10}H_5ClNClSO_3K$ . This compd. can be reduced with gaseous  $SO_2$  to I with a 97% yield. K 3-naphthoquinone-1-bromoimino-4-sulfonate is prepd. from a soln. or suspension of I in  $AcOK$  by treating with  $H_2$  water satd. with  $KCl$ . K 1-naphthoquinone-2-chloroimino-4-sulfonate (II) is prepd. from 1,2,4- $C_{10}H_6(OH)(NH_2)SO_3H$  by chlorination with a satd. soln. of  $Cl_2$  in satd.  $KCl$  during a very short period at  $-11^\circ$ . Recrystd. from  $H_2O$  it gives bright yellow crystals (yield 46-55%). The product is not sufficiently pure and contains 12.6% of the corresponding naphthoquinone. K naphthoquinone-1,4-dichloroimino-6-sulfonate,  $C_{10}H_4Cl_2NClSO_3K$ , is obtained in a similar manner from 1,4,6- $C_{10}H_3(OH)_3SO_3H$  at  $-10^\circ$ . The product is very unstable and cannot be recrystd. It is obtained purer than II, but contains still the corresponding naphthoquinone. J. WIERUSIAK

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

10

2

Application of the adiabatic microcalorimeter to the measurement of heats of adsorption and of vaporization. W. SWIATOSLAWSKI AND E. BARTOSIEWICZ. *Roczniki Chem.* 11, 78-89 (1931) (80 in French).—A modification of S.'s adiabatic microcalorimeter is described. With this new app. the following values of the heat of vaporization at 20° were found: H<sub>2</sub>O 581, C<sub>6</sub>H<sub>6</sub> 98.2, CHCl<sub>3</sub> 66.8 cal./g. The values of the heat of adsorption on activated charcoal at 20° are: C<sub>6</sub>H<sub>6</sub> 14.42, EtOH 15.59, CCl<sub>4</sub> 15.84 cal./mol. The error in the detn. of the heat of vaporization did not exceed 0.3%; that for the heat of adsorption, 0.8-1.7%.  
J. WIERZBLAK

ASAC-3LA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND GROUPS

PROCESSES AND RO-PRECESSES (NOTES)

INVESTIGATIONS ON THE VARIATION OF THE AZEOTROPIC CONCENTRATION OF ETHYL ALCOHOL-BENZENE MIXTURES AS A FUNCTION OF THE PRESSURE. W. SWIETOSLAWSKI AND R. KOPCZYŃSKI. *Roczniki Chem.* 11, 440-8(1931)(448 in French).—The compn. of an azeotropic mixt. changes with variations of the boiling pressure. Such changes of an EtOH-C<sub>6</sub>H<sub>6</sub> mixt. were detd. by means of S.'s differential ebullioscope (*C. A.* 21, 3017). The results are as follows (the first figure gives the pressure in mm. Hg, the second the concn. of EtOH, the third that of C<sub>6</sub>H<sub>6</sub> in wt. %): 700, 32.62, 67.68; 700, 32.41, 67.59; 854, 33.78, 66.22; 1155, 35.80, 64.14; 1558, 38.82, 61.18; 1743, 42.53, 57.47. J. WIENIAR

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WATERGAS

ASB-3LA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND GROUPS										3RD AND 4TH GROUPS									
PROCEDURES AND PROPERTIES INDEX																			
<p><i>CO</i></p> <p>A modification of Engler's distillation flask. W. SWITZERLAND. <i>Racemik Chem.</i>  11, 543-4 (1931) (544 in French).--The vapors evolved in the distn. flask enter the--  cooler in the middle portion; thus overheating of the liquefied vapors is prevented.  J. WIRRELLAK</p>																			
<p>ASH-51A METALLURGICAL LITERATURE CLASSIFICATION</p>																			
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100 AND 200 GROUDES

PROCESSING AND PROPERTY INDEX

Application of differential ebullioscopes for the examination of the degree of purity of individual liquid substances. W. SWINTON-LAWRENCE, J. USAKIEWICZ AND A. ZMACZYNSKI. *Rozniki Chem.* 11, 704-13 (713 in French)(1931); cf. C. A. 26, 2087.—Three types of differential ebullioscopes have been used to study the relative purity of so-called "pure" liquids, viz., one with a rectification column and two with dephlegmators of different types. Differences of the b. p. and the condensation temp. ( $t_1 - t_2$ ) of the substance examd. indicate impurities. Many so-called "pure" substances should be classified as "technically pure." The ebullioscopic control of the purity of liquids is recommended. On the basis of detns. made the following standards of purity ( $t_1 - t_2$ ) for liquid substances are proposed: very pure 0.040, sufficiently pure 0.040, relatively pure 0.200, technically pure 0.20-1.00°; for the very pure liquids a rectification column 1 m. in length is used, for the others a dephlegmator 25-7 cm. J. WIKETLAK

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

100 AND 200 GROUDES

Application of the phenomenon of azeotropy to the determination of small quantities of contaminations. W. SWIRIDZLAWSKI, *Rozwiaz Chem.* 11, 714 84.18 in French (1931) - A method is given by which small contaminations in liquid substances forming ternary azeotropic mixts. can be detd. The precision attains 0.001-0.005%.  
I. WIRTELAK

✓

Determination of moisture and the azeotropic factor in ethyl alcohol. W. SWIRSKI, *Revue Chim. 11, 719-24 (1956) in French (1957). The method of S. C. A. 26, 3158 is applied to admixtures of H<sub>2</sub>O, C<sub>2</sub>H<sub>5</sub> and gasoline in EtOH.* J. WIERZBIAK

ADDITIONAL LITERATURE CLASSIFICATION



[illegible]



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<p>Application of the adiabatic microcalorimeter to the measurement of heats of adsorption and of vaporization. --W. SWIETOSLAWSKI AND R. BARTOSZEWICZOWNA. <i>Revue intern. acad. Polonaise</i> A1931. 330-47(in French).--See C. A. 25, 3343 J. W.</p>																																																			

11A

Processes and Properties Index

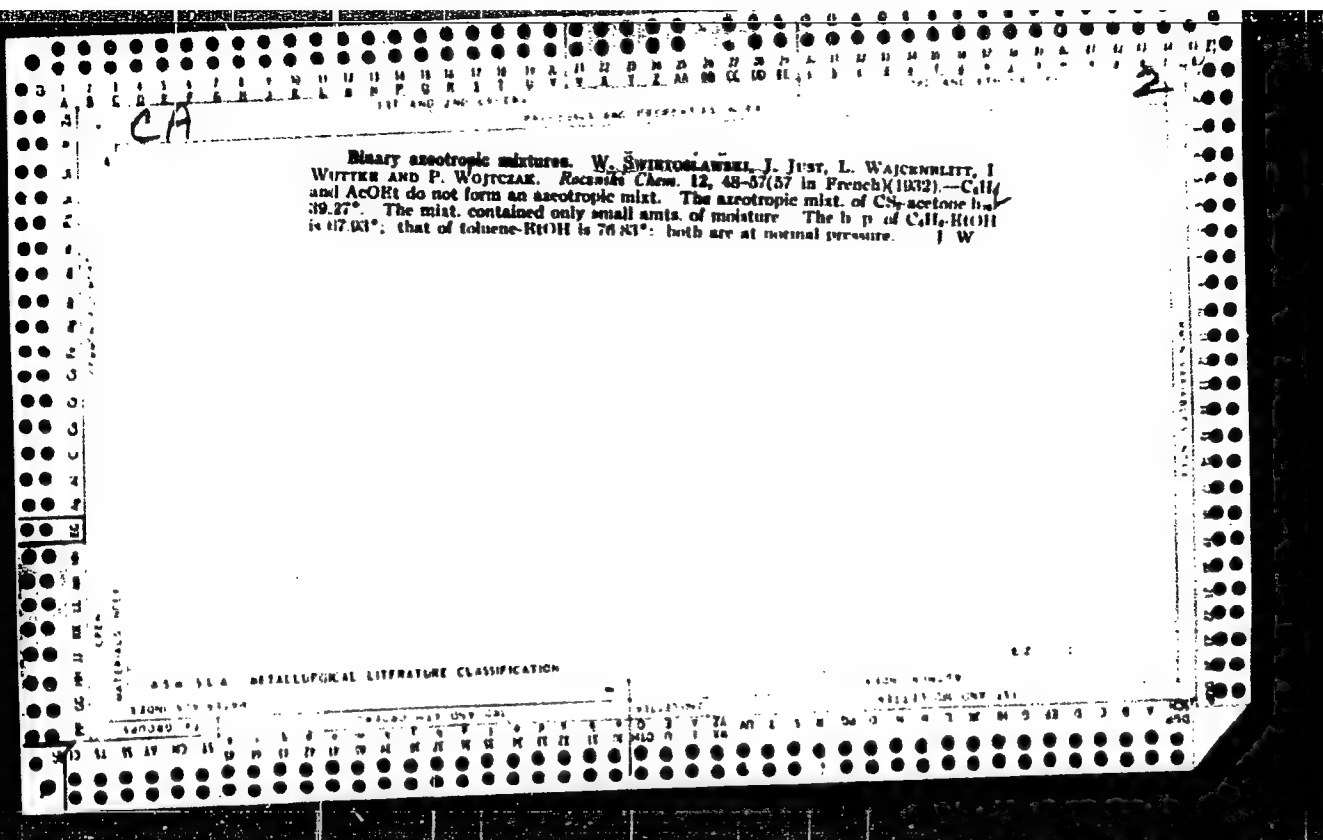
Neutronic equilibrium of isotopes. W. SWIETOSLAWSKI. *Nature* 130, 964(1932).—  
 The emission of  $\alpha$ ,  $\beta$  or  $\gamma$  particles by disintegration, or the entry of  $\alpha$  or  $\beta$  particles  
 or the electrons into the nuclei is unable to explain the existence of every isotope. The  
 existence of every kind of atom and of all isotopes can be explained by supposing that  
 the atoms of different elements can emit or incorporate neutrons even under astronomical  
 conditions. ALBERT L. HENNE

ASACSLA METALLURGICAL LITERATURE CLASSIFICATION

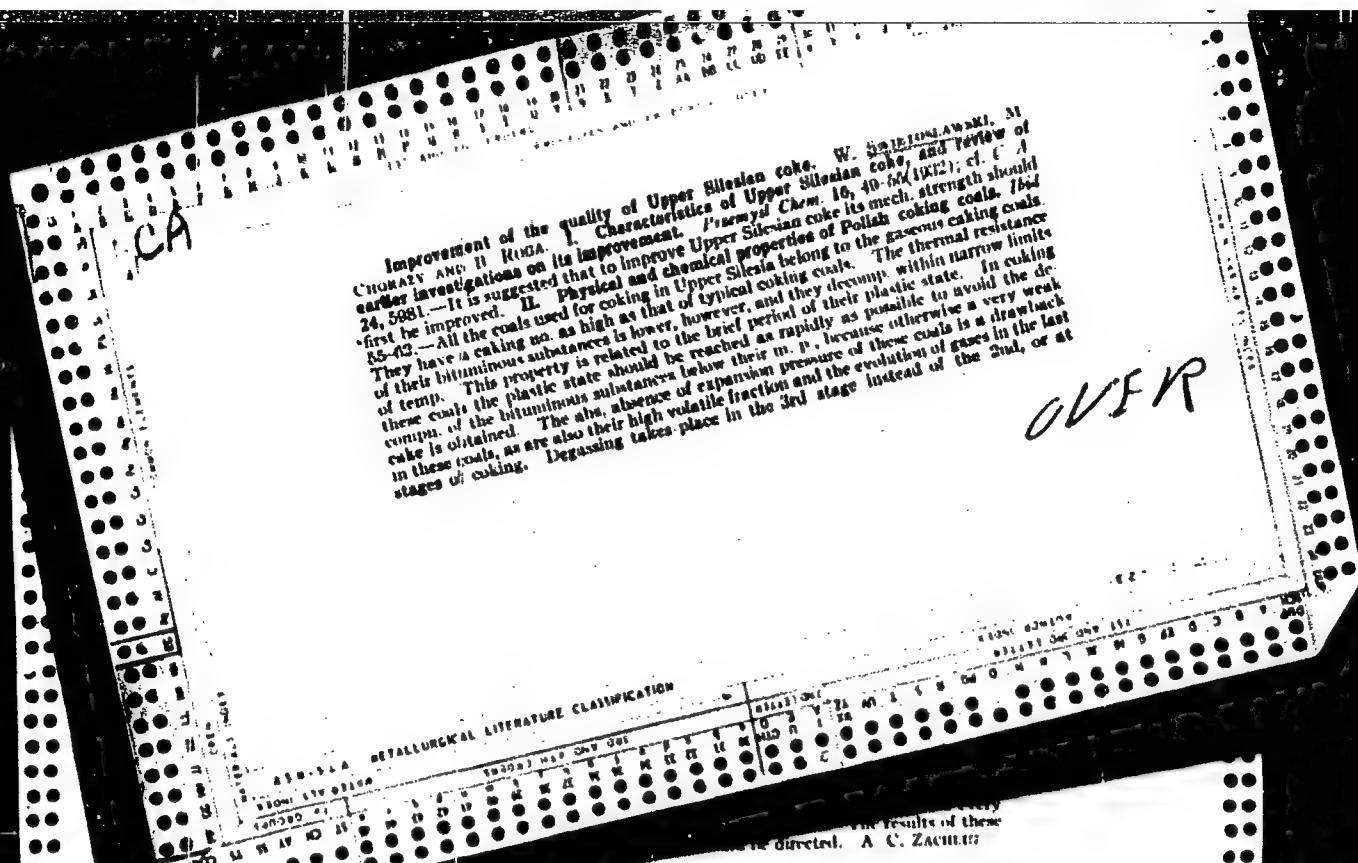
<p>1ST AND 2ND ORDER</p> <p>PROCESS AND PROPERTIES INDEX</p>		<p>1ST AND 2ND ORDER</p>	
<p>SA</p>		<p>A 73</p>	
<p>5070. Constant-Boiling Mixtures Applied to Analysis of Impurities in Liquids. W. Wydoszlewski. <i>Acad. Polonaise Sci. et Lettres, Bull.</i> No. 1-7/A. pp. 74-79. Jan.-July, 1932.—If a liquid L contains small traces of a dissolved impurity A, the quantity of the latter may be determined by means of boiling-point measurements, provided that a third substance B, also soluble in L, but not in A, can be found, such that a constant boiling-mixture of A, B and L exists, and also constant-boiling mixtures of the various pairs. Now if a quantity of the component B is added to the constant-boiling mixture of A and L, the boiling point of the A,B,L mixture is lowered considerably below that of the A,L mixture. In practice, the constant-boiling mixture of B and L is prepared, and A is added a little at a time, the boiling point being observed at each addition. The constant-boiling mixture of B with the liquid under examination is next prepared, and its boiling point immediately shows the quantity of A present. The method attains an accuracy of about 0.003%. An alternative method of experimenting is also described. (See also following Abstract.)</p> <p>J. H. A.</p>			
<p>ASM-SL-1 METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>12000 SYNDICATE</p>		<p>12000 BOWLING</p>	
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<p><b>1091. Determination of Traces of Water and of Azeotropic Dehydrator in Ethyl Alcohol. W. Swietoslawski and (Miss) J. Szwajglejka. <i>Acad. Polonaise Sci. et Lettres, Bull. No. 1-7.1. pp. 80-87. Jan.-July, 1932.</i>—Applies the principles previously developed (see preceding Abstract), to determine the quantity of water, and of the petrol-benzene mixture used to carry off the water, in ethyl alcohol. When the quantity of water is about 0.09 %, it can be determined to about 0.004 %. The method is used up to concentrations of 1-3 %.</b></p> <p style="text-align: right;">J. H. A.</p>																																																			
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<p>(A) Michael Faraday as a chemist and physical chemist. W. SWINBURNE-DAVIES Rm ✓ 2</p> <p>note (Chem 12, 18(1832)) A biography J. WILKINSON</p>																																																			
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PROCESS AND PROPERTIES INDEX																																																			
<p>Improvement of the quality of Upper Silesian coke. VI. W. Swietoslowski, B. Roga and M. Chorazy. <i>Przemysl Chem.</i> 10, 188-90(1932); <i>Ch. C. A.</i> 26, 6102. The results of lab. investigations were checked with full-scale app. With slow warming <i>i. e.</i>, at low temp. of coking, coke is obtained in large pieces, with few cracks, but of low crushing strength. With increased rate of heating, which occurs when the oven is heated to a high initial temp., the strength increases, the coke is compact, but flaky and in small pieces. Heating in two steps improves the quality of coke, especially if poor-grade coal is used. The addn. of semicoke to the coal before coking markedly improves the quality of the coke, as shown by its increased mech. strength. Semicoke with fully defined phys. properties must be used. In certain cases the addn. of non-coking coal nets favorably. VII. W. Swietoslowski, M. Chorazy and B. Roga. <i>Ibid.</i> 17, 25-33(1933).—The coking process is divided into 3 phases differentiated by the physicochem. changes which take place. Besides the insignificant visual changes which take place in the first phase up to the plastic state profound changes occur in the primitive colloidal nature of coal. In the coking and gas-forming caking coals the developed surface of the non-melting and neutral material which is to be cemented together by the semi-liquid mass is of utmost importance. Satn. of the developed surface is hindered by the surface tension of the semi-liquid mass and the evolution of gas bubbles. Since the surfaces of the coals are developed to widely varying degrees it is difficult to recognize the phenomena. The condition of cementing the solid particles together by means of the semi-liquid mass is considered by the authors in connection with sand, anthracite, coke, semicoke, etc., of the same fineness. In the third phase of the process the real and apparent sp. gr. of the coal change at different rates depending on the kind of coal. The appreciable quantities of gas which are evolved at 700° can escape only by diffusion and through cracks and fissures produced in the coke.</p> <p style="text-align: right;">A. C. Zachlin</p>																																																			
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Determination of moisture and the azeotropic factor in ethyl alcohol. W. SWIETOS-  
LAWSKI AND J. SZMIGIELSKA. *Bull. intern. acad. polonaise* 1932A, No. 7 (in "PIPIPIPI")  
See C.A. 26, 5513. J. WIERZELAK

ANALYTICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS										PRECISE AND PROPER USE										COMMON VARIANTS									
OPEN MATERIALS INDEX										CLOSED MATERIALS INDEX										COMMON VARIANTS									
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<p><b>1235. Universal Ebullioscope.</b> W. Swietoslowski. <i>Acad. Polon- aise Sci. et Lettres, Bull.</i> 4-6 A pp. 177-181, April-Oct., 1933. In French. —A modified form of differential ebullioscope is described which is designed to meet the requirements of various experiments involving the determination of the boiling or condensation temperature of a liquid. Its applications include the determination of the purity of either a solvent or dissolved substance.</p>																													
R. W. P.																													
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The possibility of spontaneous emission of neutrons by some nonradioactive elements. W. SWINTOLAWSKI AND A. DORABIAŃSKA. *Rozwini Chem.* 13, 1-4 (1933). Investigations of thermal effects of some chem. elements show the possibility of spontaneous transformation of nonradioactive elements. Analysis of the table of elements and their isotopes shows that transformations  $\alpha$ ,  $\beta$ , or  $\gamma$  cannot explain existing forms of isotopes without hypothesis of emission of neutrons. Isotopes undergo disintegration when emitting neutrons and are in a state of "neutronogenic" equil. In light elements a neutron produces the fall of an electron into the nucleus of an atom (N) and forms an atom (N-1), which is an unstable isotope and emits a neutron. Pos. results in expts proving neutronogenic decomposition of nonradioactive elements were obtained for Sc, Yt, La, Ac, Sb, Bi and Fr.

1ST AND 2ND FINGERS

PROCESSES AND PROPERTIES INDEX

Classification of zeotropic and azeotropic mixtures. W. SWIETOSLAWSKI. Roczniki Chem. 12 125-9 (in French 129)(1933). Mixts. of liquids are classified according to degree of poly. of constituents in each other. Zeotropic mixts. are those that do not show max. or min. pressures of constituent liquids; azeotropic mixts. form max. and min. pressure. Homazeotropic and homoazeotropic mixts. are those with a single phase; when 2 or more phases appear the mixts. are called heterazeotropic and heterazeotropic.

FELIX P. LAR

AS A METALLURGICAL LITERATURE CLASSIFICATION

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<p>Ternary azeotropic mixtures. 1. Application of the differential ebullioscope to the study of the azeotropism of ternary mixtures. W. Swietoslowski. <i>Roczniki Chem.</i> 13, 227-34 (in French 234-5) (1933); cf. <i>C. A.</i> 27, 3849.—Suggestions are given for covering a ternary diagram in searching for the compn. of a homo- or heteroazeotrope. T. H. Chilton</p>																																																																													
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1ST AND 2ND COLUMNS

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Ternary azeotropic mixtures. III. The heteroazeotropic compound of ethanol, water and carbon disulfide. W. Strykowski and B. Wardziński. *Roczniki Chem.* 18, 381-3(1933); cf. C. A. 26, 1490.—The modified ebullioscopic app. was applied to the investigation of the system  $H_2O-EtOH-CS_2$ . The method of adding successively small portions of one component to the binary mixt. of the 2 others was applied. The mixt. 92.30%  $CS_2$ , 0.65%  $EtOH$  - 1.00%  $H_2O$ , b.p. 61.345°, was found to be the one which would cross the heteroazeotropic line of the binary mixt.  $CS_2 - EtOH$  at approx. right angles. The equation best fitting the curve is  $x + 1.4y = 101.63$ ;  $x$  = percentage  $CS_2$ ,  $y$  = percentage  $EtOH$ ;  $s$  is found from  $x + y + s = 100$ . The relation between the coeffs. was found as  $dp/di_{hetero} = 1.05$  ( $p = 1$  atm.).

C. T. Ichniowski

ASB SLA METALLURGICAL LITERATURE CLASSIFICATION

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PROCESSES AND PROPERTIES INDEX																			
<p>CFI</p>										<p>2</p>									
<p>A study of the degree of purity of benzene and its dehydration by heteroazeotropic distillation. W. Swietoslawski and J. Usakiewicz. <i>Roczniki Chem.</i> 19, 495-501 (1933).—Dehydration was accomplished within 0.001%. Heteroazeotropic distn. was performed by using a differential ebullioscope with a siphonator. Relative purities of <math>C_6H_6</math> as shown by <math>n_D</math> are: Merck's (pro analysis) 99.999%; triply purified 99.999%; differences between b. p. and condensing points are 0.004° and 0.004°, resp., <math>C_6H_6</math> forms isotropic solns. with thiobenzene. C. T. Ichniowski</p>																			
<p>ATM-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>										<p>RESEARCH AND DEVELOPMENT</p>									

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PROCESSING AND PREPARATION INDEX										CLASSIFICATION INDEX									
<p>ca</p>										<p>2</p>									
<p>A study of the degree of purity of benzene and its dehydration by heteroazeotropic distillation. W. Swietoslawski and J. Usakiewicz. <i>Roczniki Chem.</i> 13, 405 D (in French 400-500)(1933). Dehydration was accomplished within 0.001%. Heteroazeotropic distn. was performed by using a differential ebullioscope with a dephlegmator. Relative purities of <math>C_6H_6</math> as shown by b.p. are: Merck's (<i>pro analysi</i>) 80.089°; triply purified 80.110°; differences between b. p. and condensing points are 0.004° and 0.004°, resp., <math>C_6H_6</math> forms zeotropic solns. with thiophene.</p>										<p>C. T. Ichniowski</p>									
<p>ASB-3LA METALLURGICAL LITERATURE CLASSIFICATION</p>										<p>82-11-11</p>									
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*ca*

Dehydrated ethanol of high purity. W. Sawienkowski  
and J. Usakiewicz. *Rozprawy Chem.* 13, 548-611 (1933) in  
French(1933).—A method for obtaining dehydrated  
ethanol is described. The ethanol is first dehydrated to  
within 0.4% with CaO and then rectified by heteroazeo-  
tropic distn.—the system being EtOH-H<sub>2</sub>O-CS<sub>2</sub>. The  
degree of purity of the 3 samples of ethanol studied was  
detd. by means of two ebullioscopes with dephlegmators,  
2) and 50 cm., resp., and a 14-bulb rectifying column.  
Dehydrated ethanol b.p. 78.32° = 0.011-0.012°. T. L-hajnowski

1

A universal ebulliometer and its applications. W. Swietochowski. *Bull. intern. acad. polonaise, Classe sci. math.* vol. 1933A, 177-81.—A combination of differential ebulliometer with fractionating column is described with directions for its use in detg. the purity of a solvent or azeotropic mixt., the purity of a solute, or the compn. of an azeotropic mixt.

C. D. West

CA 2

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX

The ternary heterosystem system composed of ethyl alcohol, carbon dioxide and water. W. Swietoslawski and B. Wardziński. *Bull. intern. acad. polonaise. Classe sci. math. nat.* 1933A, 463-71. — See C. A. 28, 151. G. G.

AD-55A METALLURGICAL LITERATURE CLASSIFICATION

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Classification of zotropic and azeotropic mixtures.  
Swietoslowski. *Bull. intern. acad. polonaise Classe*  
*Sci. math. nat.* 1933A, 472-6. — See C. A., 27, 3440.  
G. G.

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2547. Microcalorimetry. W. Swietoslowski. *Acad. Polonaise Sci. et Lettres, Bull.* 1-2 A. pp. 61-66. Jan.-Feb., 1934. In French.—The paper describes two improvements, both of which are concerned with the elimination of errors due to defects in the thermoelectric circuit used to ensure equality of temperature of the calorimeter and its surrounding mantle. [See Abstract 2489 (1933).] The first device consists in bringing the calorimeter into actual contact with the mantle from time to time and reading the galvanometer under these conditions, when it is certain that calorimeter and mantle are at the same temperature. The second device is concerned with the detection of parasitic e.m.f.'s in the galvanometer circuit.

L. G. C.

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AD-354 METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDER													3RD AND 4TH ORDER												
<p>Application of the ebullioscope to precise determination of coefficients of waterification. W. Swietoslowski. <i>Russkii Khim.</i> 14, 98-104(1934); cf. <i>C. A.</i> 27, 2573.</p> <p>2573.—By an ebullioscopic method, which permits the elimination of a no. of sources of error inherent in the analytical methods, slightly higher values are obtained for velocity of formation of <math>K_2O_2</math>. B. C. A.</p>																									
<p>ADN-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>																									
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<p><i>ca</i></p> <p>Several improvements in the adiabatic microcalorimeter, W. Swietoslowski, <i>Rozprawy Chem.</i> 14, 188-204 (1934); cf. <i>C. A.</i> 38, 3943. The improvements were introduced to avoid systematic errors occurring from e. m. f. changes arising in the thermocouple. The compartment in which the calorimeter is suspended is so constructed as to contain in its base a conical nest the exact size of the calorimeter. At the beginning of the expt. or as the need arises the calorimeter is lowered by means of a weighted thread into the nest to det. the uniformity in temp. (a zero galvanometric reading). A switch is added to the set-up to permit an external control of the thermocouple if there is no e. m. f. These improvements give good results in detg. thermal changes in the setting of cement. C. T. Ichaiowski</p>																			
<p>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>1ST AND 2ND ORDERS 3RD AND 4TH ORDERS</p>																			

100 calorimeter for measuring small continuous thermal effects. W. Swietoslawski, A. Zmarzyński, I. Zlotowski, J. Salcewicz and J. Umiński. *Reactive Chem.* 14, 861-8(1964).—A description of the construction and manipulation of a new ice calorimeter applicable to determination of small continuous thermal effects of the order of 1 cal./hr. and with an accuracy of 0.03-0.1 cal./hr. C. T. I.

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
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<p>ca</p>										<p>γ</p>									
<p>Application of the ice calorimeter to determination of the heat evolved by pitchblende. W. Swietoslowski, I. Zlotowski, J. Sakewicz, J. Usakiewicz and A. Zniaczynski. <i>Russkii Khim.</i> 14, 301-3 (1944). The results obtained for pitchblende are higher than those obtained by other authors using different calorimeters; the discrepancy is ascribed to the comparatively high expl. error (more than 10% for heat effects of the order of <math>7 \times 10^{-4}</math> cal. per hr.). B. C. A.</p>																			
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			

1ST AND 2ND COLUMNS													3RD AND 4TH COLUMNS												
COMMON ELEMENTS													COMMON VARIABLE INDEX												
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<b>IGNACY MOSCICKI as a practical chemist. W. Swietoslowski. Roczniki Chem. 16, 330-331 (1934). Ignacy Moscicki. Lech Suchowinski. Ibid. 333-339. -A biography. Ignacy Moscicki [Bibliography]. Ibid. 371-4.</b> <div style="text-align: right;">J. P. Matejczak</div>																									
<b>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</b>													<b>2-27-77</b>												
<b>REGIONAL LITERATURE</b>													<b>REGIONAL LITERATURE</b>												
<b>GROUPS</b>													<b>GROUPS</b>												

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Application of V. Meyer's method to determination of moisture content. W. Swietojanski, H. Brzostowska, and M. Krakowski. *Roczniki Chem.* 14, 661 (1941). The H<sub>2</sub>O content of various products can be rapidly and conveniently determined by measuring the vol. of vapor evolved when the sample is heated at the appropriate temp. in a modified V. Meyer app. R C A

ASACAL METALLURGICAL LITERATURE CLASSIFICATION

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<p>Abnormal thermal effects evolved from certain minerals and certain chemical compounds. II. Experiments made with the ice calorimeter. W. Swietoslowski, A. Zmazyński, I. Zmazyński, J. Usakowski and J. Sakiewicz. <i>Roczniki Chem.</i> 14, 1474-8(1934); cf. C. A. 28, 42081. Study of the thermal effects of <math>As_2S_3</math> and monazite with the ice calorimeter showed that no energy changes resulting in thermal effects greater than <math>5 \times 10^{-3}</math> cal./g./hr. could be detected. The same results were obtained when <math>As_2S_3</math> was placed in the calorimeter along with compels. of La, Y and Sc. C. T. Ichniowski</p>																																																			
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			
<p>1ST AND 2ND ORDERS</p>																																																			
<p>3RD AND 4TH ORDERS</p>																																																			

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Total quantity of vapors and gases evolved during the thermal decomposition of coal and of its petrographic varieties. W. Swietoslowski and H. Brzustowska. *Przemysl Chem.* 18, 571-4 (1934).—The evolution of gases and vapors from coals of a low content of volatile constituents (I) (not more than 20%) proceeds at a const. velocity from 370° to 440°, above which it proceeds at a rate proportional to the temp.; the length of the period of const. evolution diminishes with increasing I, and is zero for gas-flaming coals. The vol. of gaseous products evolved from petrographic varieties diminishes in the order vitrain, durain, fusain. B. C. A.

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PERMEABILITY OF METALLURGICAL COKE AS A CHARACTERISTIC PROPERTY. W. Swietoslowski and M. Chorazy. *Przemysl Chem.* 18, 876-8(1934). The permeability ( $P$  = no. of cc. of  $N_2$  passing per min. through 1 sq. cm. of coke under a pressure gradient of 1 mm. Hg) of coke from French coking coal is 243 and 833, from Westphalian coking coal 90 and 410, and from Silesian coking gas coal 10.7 and 42.7, resp., for samples taken from the center of the oven and from the vicinity of the walls. The  $P$  of coke from noncaking coal and pitch briquettes is 310, from peat sem coke and pitch briquettes 10, from peat briquettes 70, from unpressed peat 1443 and for alder charcoal 550. B. C. A.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



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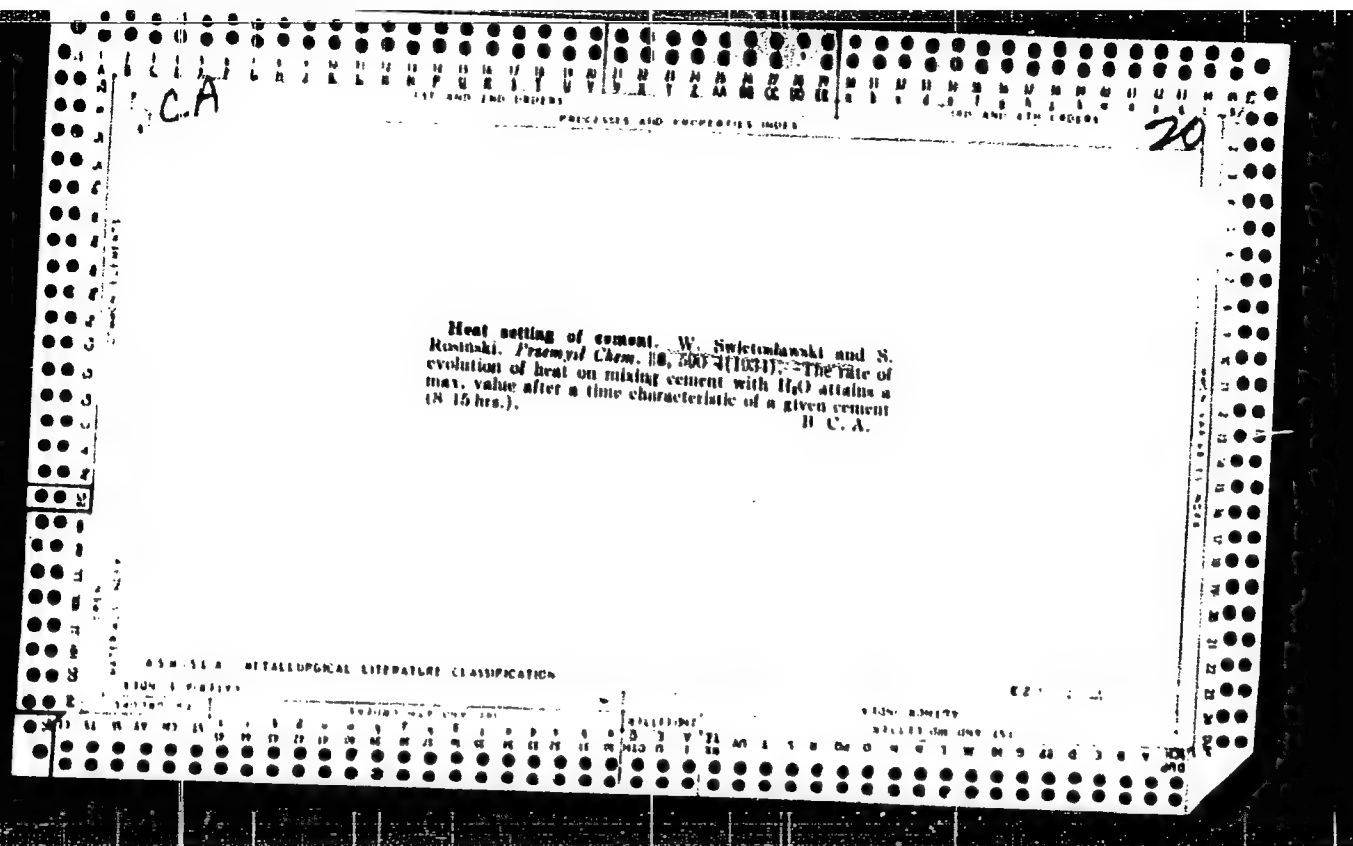
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PRODUCTION OF SEMI-COKE AND COKE FROM NON-COKING COALS.

1. W. Swietoslawski and M. Chorazy. *Przemysl Chem.* 18, 575-59 (1934). The mech. properties of coke from briquettes made from non-caking coals and pitch have been studied with reference to the temp. and pressure of briquetting, to the relative proportions of the constituents, and to the type of coal taken. The permeability to gases, combustibility, reactivity and mech. strength of coked briquettes prep'd. under appropriate conditions may be greater than that of Ruhr basin cokes. Raising the pressure to greater than 160 atm. has little effect on the mech. strength of the cokes.

B. C. A.

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION



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Abnormal thermal effects produced by certain minerals and certain chemical substances. I. Experiments made with an adiabatic calorimeter. W. Swietlański and E. Bartoszewicz. *Bull. intern. acad. sci. math. nat.* 1934A, 69-72.—Neither metallic Sb nor  $AsO_3$  produces a thermal effect as large as 0.00005 cal. per g. per hr.

CA

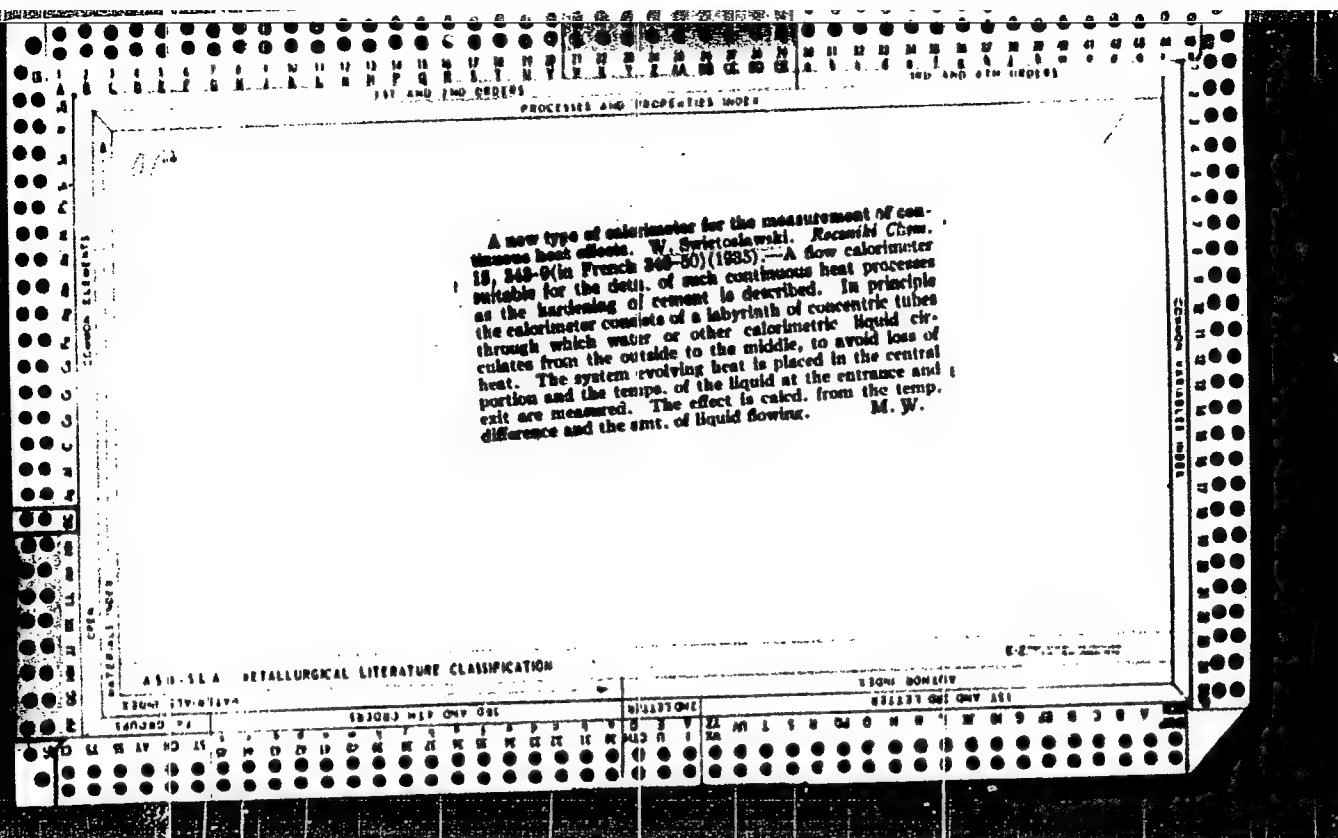
The application of V. Meyer's method for determining moisture in solid substances. W. Swietoslawski, H. Brzustowska and M. Krakowski. *Ann. acad. sci. tech. Varsovie* 1, 115(1935); *Fuel* 14, 305-6(1935); cf. C. I. 29, 6171<sup>1</sup>.—Meyer's vapor-d. method was used to det. moisture in coals, cokes and tobacco. A detn. can be made in 10 min., and the results agree with those obtained by standard methods. D. A. Reynolds

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ASD 55A DETAIL FOR AL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS		PROCESSING AND PROPERTY INDEX		3RD AND 4TH ORDERS	
<p>3750. Succinic Acid as Secondary Calorimetric Standard. W. Swietoslowski, M. Wojciechowski and E. Sapiro, Acad. Polonaise Sci. et Lettres, Bull. 9-10, pp. 531-539, Nov.-Dec., 1935. In English. — The universal ebulliometer with several dephlegmators is applied to the determination of the quantity of water in a sample of succinic acid used by Kettler for thermochemical measurements. The amount of water in this sample was found to be only 0.003 %. The influence of the temperature on the degree of decomposition of succinic acid is studied when heated to 80° C. the acid slowly decomposes the amount of water (after 9 hours heating in a closed tube), increasing to 0.004 %. When heated to 130° for 8 hours the water content attains 0.018 %, on heating to 180° C. the substance decomposes and becomes yellowish. [See Abstract 4350 (1934).]</p> <p style="text-align: right;">A 53 J</p> <p style="text-align: right;">AUTHORS.</p>					
<p>AS 15 SLA METALLURGICAL LITERATURE CLASSIFICATION</p>					

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSING AND PROPERTIES INDEX																			
<p>Specific heat of minerals and of rare earth salts. W. S. Shubnikov, J. Salcewicz, J. Usankiewicz, A. Zmoczynski and J. Zlotowski. <i>Rozprawy Chem.</i> 18, 12-14 (1935).— By use of an ice calorimeter, av. values for the sp. heat <math>c_p</math> were obtained for the following: Ag, <math>c_p = 0.05632</math>; Sb, <math>c_p = 0.04745</math>; Johannite, <math>c_{p,3} = 0.1290</math>; thorite, <math>c_p = 0.1320</math>; samarskite, <math>c_p = 0.1078</math>; monazite, <math>c_{p,3} = 0.1034</math>; <math>\text{Sr}_2\text{ZnH}_2\text{F}_6</math>, <math>c_{p,2} = 0.4213</math>; Y nitrate, <math>c_{p,3} = 0.2752</math>; Ba nitrate, <math>c_{p,3} = 0.3710</math>; Y oxalate, <math>c_{p,3} = 0.4640</math>; La oxalate, <math>c_{p,3} = 0.4641</math>; cane sugar, <math>c_{p,3} =</math></p> <p>0.2774, <math>c_p = 0.2610</math>, <math>dc/dt = 0.00113</math> and <math>c_p = 0.2689</math>. J. F. Matejczyk</p>																			
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Purification and determination of the degree of purity of toluene. W. Swietoslowski and E. Ramotowski. *Roczniki Chem.* 19, 422-3 (1935).—Toluene, obtained in the "fifth degree of purity" (cf. C. A. 29, 4085) by (1) distn. through a rectification column of 20 bulbs and arranged for slow distn. and (2) by use of a multidephlegmator, has  $d_4^{20}$  0.86606,  $n_D^{20}$  1.49613, and most probable b. p. of 110.612-0.614°. The changes of b. p. and  $\Delta t$  (difference between b. p. and the condensation temp.) are functions of introduced contaminants;  $\Delta t$  varies with the concn. of the contaminant. Toluene undergoes practically no change in b. p. when contaminated with a mixt. of  $C_6H_6$  and *m*-xylene in the ratio 1:1 by wt. but  $\Delta t$  increases in proportion to the amt. of mixt. introduced; a 0.0024% concn. of the adulterant mixt. in toluene increases  $\Delta t$  by 0.001°.

C. T. Ichniowski

ASAC-55A METALLURGICAL LITERATURE CLASSIFICATION

20

6A

A flow calorimeter for investigating the heat of setting of cement. W. Swietoslowski. *Przemysl Chem.* 10, 181 (1935). A flow calorimeter of the new labyrinth type and its application to the study of the reaction of cement with water are described. The plot of heat evolved against time shows the existence of a min. and of a max. When the proportion of water to cement is decreased, the max. is displaced toward the origin. A. C. Zachlin

ASAC-56A METALLURGICAL LITERATURE CLASSIFICATION

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The determination of small quantities of water in solid organic substances. W. Swietoslawski and S. Miernik. *Bull. intern. acad. polonaise, Classe III. math. nat.* 1935A, 2318. - An improved universal ebulliometer (C. A. 25, 256) with one dephlegmator is described. When an absolutely anhyd. solid, such as  $\text{PhCO}_2\text{H}$ , is added to an azeotropic mixt. of  $\text{C}_6\text{H}_6$  and  $\text{EtOH}$  in the ebulliometer the temp. of condensation,  $t$ , at the top of the dephlegmator is not affected. However, if there is any  $\text{H}_2\text{O}$  in the solid,  $t$  will drop. The procedure is to det.  $t$  for the azeotropic mixt., add a known wt. of solid, det.  $t$  again, and then add known wts. of  $\text{H}_2\text{O}$  dissolved in  $\text{C}_6\text{H}_6$  and  $\text{EtOH}$ , detg.  $t$  each time.  $\Delta t$  per mg.  $\text{H}_2\text{O}$  can now be calcd. and from the drop in  $t$  when the solid was added the percentage of  $\text{H}_2\text{O}$  in the solid is calcd. By using over 15 g. of solid as little as 0.001%  $\text{H}_2\text{O}$  can be detected. Some results were: com.  $\text{PhCO}_2\text{H}$ , 0.13%  $\text{H}_2\text{O}$ ;  $\text{PhCO}_2\text{H}$ , Merck, for calorimetry, 0.016%; same, dried over  $\text{P}_2\text{O}_5$ , 0.001%; same, heated to b. p. *in vacuo*, 0.002%; com. salicylic acid, 0.050%. John R. Milbery

ASAC 544 DETAILER LITERATURE CLASSIFICATION

60

7

Ebulliometric measurements of the moisture content in standard benzoic acid. W. Swietoslowski, M. Wincelowski and S. Mierink. *Bull. intern. acid. polonaise. Classe sci. math. nat.* 1935A, 59-61; cf. preceding abstract.—A somewhat more complicated app. was used in this case than in the preceding. The ebullimeter had 2 dephlegmators. A sample of standard benzoic acid (sample 48-a, prepd. by the Bureau of Standards at Washington) was found to contain  $0.0047 \pm 0.0008\%$   $H_2O$ . A pellet of  $PhCO_2H$  contg.  $0.002\%$   $H_2O$  was placed in satd.  $H_2O$  vapor at  $25^\circ$  for 3 hrs., after which it was found to contain  $0.012\%$   $H_2O$ . Therefore, the error in calorimetric detns. caused by the absorption of  $H_2O$  on the  $PhCO_2H$  pellet while the bomb is being prepd. (15-30 min.) is not over 0.1 cal. and may be neglected.

John R. Millery

ASD S.E.A. METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS										PROCESSES AND PROPERTIES INDEX									
<p><b>Ebullimetric investigation of the impurities of succinic acid, proposed as a secondary standard for calorimetric measurements.</b> W. Szwedowski, M. Wojciechowski and P. Sapota. <i>Ruch. inorg. chem. polonier, Class sci. math. nat.</i> 1935A, XI 9. Succinic acid, when crysd. from water and dried for 8 hrs. at 80°, contains not more than 0.003% of moisture; when crysd. from Me<sub>2</sub>CO and dried for 5 hrs. at 80°, the acid contains not more than 0.02% of Me<sub>2</sub>CO; when heated to 80° for 9 hrs., the acid slowly decomposes, the water content increasing to 0.04%; when heated to 100° for 9 hrs., the water content increases to 0.018%; when heated to 120°, the acid obviously decomposes. [P. I. Ruzinski]</p>																			
<p>ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>										<p>8-2</p>									

1

On the Thermal Effects Which Appear During the Phenomenon of Ageing Aluminium Alloys. W. Świątosławski and J. Ciochrański (*Wielimodni Instytut Metalurgji i Metalmateryału* (Warsaw), 1936, 2, (2), 50-57).—[In Polish, with German summary.] It has long been supposed that heat effects occur during certain transformations which take place during the recrystallization or ageing of light alloys; at high temperatures such effects have already been observed and by the aid of a specially constructed micro-calorimeter similar effects have now been detected during natural ageing at room temperature. The experiments were made on a 580 grm. block of an alloy of aluminium with copper 5.2, iron 0.60, manganese 0.33, silicon 0.54, and magnesium 0.63%, after quenching from 510° C. in cold water. After storage for 22 hrs. at room temperature a rapid evolution of heat occurred which gradually decreased with lapse of time but did not entirely cease until 11 days had elapsed; the total heat evolution between the 22nd and 266th hour was 273.3 grm.-cal. equivalent to 0.4712 grm.-cal./grm. of alloy.—A. H. P.

ASAC SLA DETAILLUPICAL LITERATURE CLASSIFICATION  
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LITERATURE INDEX

**\*2716. Critical Temperatures of Individual Liquids and their Mixtures.** W. Jędrzejowski and S. Fliszczyk. *Acad. Polonaise Sci. et Lettres, Bull.* 1-2A. pp. 78-80. Jan.-Feb. 1937. In English.— A comparative method of measuring critical temperatures of liquid individual substances and mixtures is described. An apparatus suitable for simultaneous measurements of critical temperatures of several substances is described. A series of mixtures composed of CS<sub>2</sub> and acetone is examined by this method and the most probable composition of the azeotrope (72.1 % of acetone) at critical conditions is reported. It is shown that under these conditions the lowering of critical temperature is 3.3° C., when compared with that of acetone. When the critical temperature of acetone as a reference liquid is taken as 237.5° C., the critical temperature of the azeotropic mixture of CS<sub>2</sub> and acetone is equal to 234.3° C. AUTOMOS.





1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESS AND PROPERTIES INDEX																																																			
<p><b>*Preliminary Measurements of the Heat Produced by the Internal Deformation of a Block of Lead Influenced by Its Own Weight.</b> W. Swigalski, L. Kettler, and J. Nalewicz (<i>Bull. Internat. Acad. Polon. Sci. Techn.</i>, 1957, [A], (9/10), 510-554).-- [In English.] A lead block weighing 18.4 kg. was suspended in an atmosphere of dry nitrogen by means of steel wires attached at three points on the upper surface and, after insertion in a thermostat, temperature variations at several points in the block produced by self-deformation were measured by means of thermocouples over a period of days. The amount of heat evolved was found to decrease from <math>4 \cdot 10^{-4}</math> gram-cal./gram./hr. on the first day to <math>2 \cdot 10^{-4}</math> gram-cal./gram./hr. on the 21st day, and was shown to be due entirely to deformation of the metal under its own load.--A. R. P.</p>																																																			
<p>ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			
<p>1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100 4200 4300 4400 4500 4600 4700 4800 4900 5000 5100 5200 5300 5400 5500 5600 5700 5800 5900 6000 6100 6200 6300 6400 6500 6600 6700 6800 6900 7000 7100 7200 7300 7400 7500 7600 7700 7800 7900 8000 8100 8200 8300 8400 8500 8600 8700 8800 8900 9000 9100 9200 9300 9400 9500 9600 9700 9800 9900</p>																																																			

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p>Characterization of coals by agglutination index curves of binary mixtures. W. Swietoslowski, <i>Tech. Acad. Sci., Poland</i> 1937; <i>Ind</i> 16, 204 (1937).--S. proposes to classify caking, feebly caking and noncaking gas coals by comparison of the curves of the agglutination indexes of binary mixts. of: (1) coals and coke or anthracite; (2) coals, of which one is a coking standard; (3) coals and pitch. The agglutination indexes are detd. by measuring the strength of crucible cokes in a lab. drum (Roga's test method). The coking quality of a sample is obtained by comparing the index curve of one of the binary mixts. with that for a coal typical of the field being studied. Practical use of the method may be made in com. plants in the selection of optimum blends. D. A. Reynolds</p>																			
<p>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
<p>COMMON ELEMENTS</p>										<p>COMMON VARIABLE INDEX</p>									

*CX*

*2*

Effect of expansion of vapors on the efficiency of distillation. W. Kulechowski and R. Ramotowski. *Moscow Chem. Ind.* 1917. 101-102. French 207-81 (1917). Adiabatic expansion has a great effect on the efficiency of distn.  
M. Wukolechowski

ASG-SLA METALLURGICAL LITERATURE CLASSIFICATION

EDITION SYMBOLS	SUBJECT MATTER ONLY CODE	RELATION	FROM SOURCE
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

[illegible]

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p>Device for automatic registration in investigations of heat effects which last a long time. W. Swietoslawski and J. Pomorski. <i>Racinski Chim.</i> 17, 203-8 (in English 208) (1987).--Devices are described for automatic registration of the amt. of water flowing through app., difference in temps. and the time intervals during the measurement. M. Wojciechowski</p>																			
<p>ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									

[illegible]

100 AND 1000 INDEX

100 AND 1000 INDEX

24

Calorimetric studies of thermal transformations of nitrocellulose powders. W. Świątkowski, T. Urbanowski, H. Capius and M. Rosiński. *Roczniki Chem.* 17, 444-53 (in English 452-3) (1937).—A calorimeter devised for measuring very small heat effects evolved in processes of long duration was used. Old nitrocellulose powder after previous heating to 75° showed a heat effect, which slowly disappeared; after a second heating to 75° the process of decomposition proceeded with increasing velocity. Freshly prepd. gun powder showed a very small heat effect, which disappeared after some time; a second exposure to the air caused its reappearance. Further contact with air or even with oxygen caused the heat effect to disappear.

M. Weickchowski

ASAP-51A METALLURGICAL LITERATURE CLASSIFICATION

100 AND 1000 INDEX

100 AND 1000 INDEX

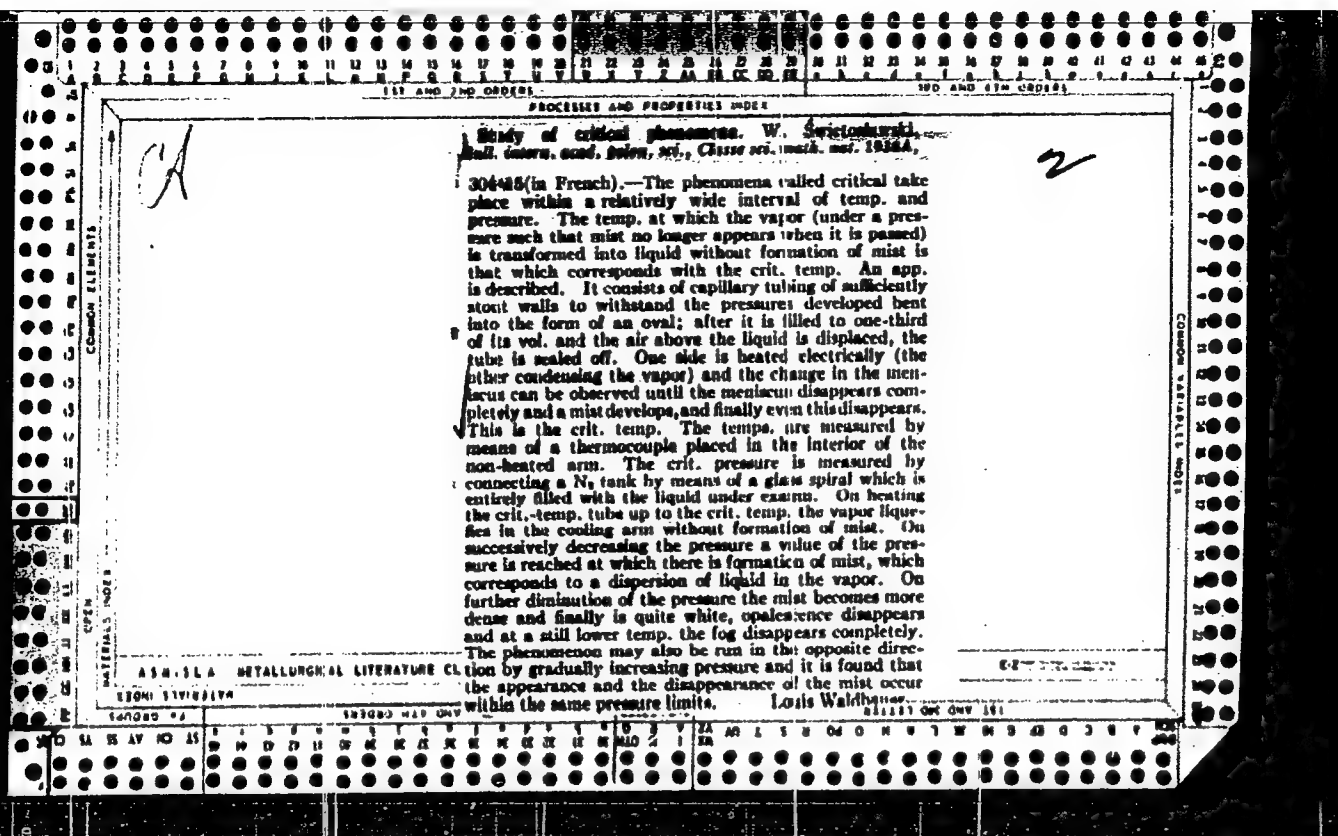
**Agglutinating ability of coal or resin in two- and three-component systems containing other coals or neutral diluting media.** W. Swietochowski and C. Hanter. *Przemysł Chem.* 21, 108-10 (1937) 112. Use of the tumbling method of Ruge (cf. C. A. 20, 4440) for evaluating the strength of samples of coke prepd. by the crucible method a series of two- and three-component mixts. was investigated in which agglutinating coal or resin was the plastic and binding material, and anthracite, coke or non-agglutinating gas coals were the diluents. In all cases the relationship between the agglutinating value of the mixt. and the concn. of the binding materials was direct. Generally with the greater concns. of agglutinating coal pos. deviations from the mech. strength of the mixt. calcd. on the basis of the additive principle appeared in both the two- and the three-component mixts. Neg. deviations from such values appeared when the proportions of diluents were very great, and especially when the mixt. consisted of very slightly agglutinating coal with coke or anthracite. The addn. of resins to agglutinating coals acted adversely on the strength of coke, but its addn. to slightly agglutinating coals resulted in a gain in strength. While the results do not necessarily reflect the results which would be obtained if the given mixts. were put into a

cake even they nevertheless give an indication of the method of choosing the components whose properties in a mixt. do not obey the additive law. A. C. Zechin



Characterization of gas coals on the basis of curves  
representing the agglutination values of two-component  
mixtures. W. Swietoslowski, *Przemysl Chem.* 21, 116-  
91(1937). See C.A. 31, 7022. A. C. Zachlin

[illegible]



1ST AND 2ND ORDER										3RD AND 4TH ORDER									
PROCESS AND PROPERTIES INDEX																			
<p><i>ca</i></p> <p><b>Critical, precritical and postcritical phenomena.</b> W. Swietoslawski. <i>Recueil Chem.</i> 19, 375-81(1939); cf. <i>C. A.</i> 33, 3647<sup>u</sup>.—App. for observation of the crit. state of liquids is described. The precrit. state is that of co-existence of liquid with mist, and in this state the surface tension of the liquid is only slightly greater than zero, and its d. greater than that of the vapor. At the crit. point the mist disappears. The existence of a postcrit. state is postulated at temps. and pressures greater than the crit. <i>R. E. P. A.</i></p>																			
<p>COMMON ELEMENTS</p> <p>COMMON VALUABLES INDEX</p>																			
<p>ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
1ST AND 2ND ORDER										3RD AND 4TH ORDER									
<p>COMMON ELEMENTS</p> <p>COMMON VALUABLES INDEX</p>																			

PROCESS AND PROPERTIES INDEX

1

C.A.

The simple and differential cryometers and their uses.  
Wojciech, Antoniowski. *Racinski Chem.* 21, 94-107  
(1947); cf. C.A.B. 26, 813. This is the first in a proposed  
series of articles on cryometric measurements. A static  
method for the determination of the solid-liquid equilibrium temperature is  
described. The construction of a differential cryometer  
and of devices for the dehydration and degasification of a  
sample is shown. The application of the differential  
cryometer to the study of the relationship between per-  
centage of molten liquid and the equilibrium temperature and its  
use for the purification of a sample by fractional crystallization are  
shown.

H. H. Gammert

ASS. SLA METALLURGICAL LITERATURE CLASSIFICATION

USONI BOWLEY

USONI BOWLEY

1ST AND 2ND DEGREE										3RD AND 4TH DEGREE									
PROCESSES AND PROPERTIES INDEX																			
<p>Phase rule and the action of gravity. W. Swietochowski (Inst. Technol., Warsaw, Poland). <i>J. Chem. Education</i> 24, 606-8(1947).—In no system contg. liquids or solids is it possible for the pressure to be everywhere the same. This will lead to the disappearance of the less dense con- densed phase if solid, liquid, and vapor are held isother- mally at the triple point and layering of the phases with change in temp. if they are mixed at the triple point and protected adiabatically. John Howe Pratt</p>																			
<p>ASM-A-55 METALLURGICAL LITERATURE CLASSIFICATION</p>																			
<p>10000 11000 12000 13000 14000 15000 16000 17000 18000 19000</p>										<p>20000 21000 22000 23000 24000 25000 26000 27000 28000 29000</p>									

1ST AND 2ND SECTIONS										3RD AND 4TH SECTIONS									
PROCEDURES AND PROPERTIES INDEX																			
<p>Distillation and crystallization as completing methods of purification. W. Swietoslawski. <i>Przemysl Chem.</i> 26, 33-6(1947); cf. <i>C.A.</i> 24, 2038; 39, 2092; 3146; 40, 1950. The difficulties of azeotropic distn. of benzene and naphthalene-contg. mixts. are discussed. A series of curves is given representing the isobars of azeotropic mixts. of component A with components B, B<sub>1</sub>, B<sub>2</sub>, ..., B<sub>n-1</sub>, B<sub>n</sub>, B<sub>n+1</sub>. Azeotropic distn., however, even with the most efficient columns, will not yield completely pure aromatics. It is suggested that crystn. and app. for it be perfected and utilized with azeotropic distn. J. Skarbek</p>																			
<p>ASM-AIA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
FROM SYNOPTIC										FROM SUMMARY									
SUBJECT ONE ONLY LIST										SUBJECT ONE ONLY LIST									

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PROPERTIES INDEX																										VARIABLES INDEX																									
<div style="position: relative; height: 200px;"> <span style="position: absolute; top: 10px; left: 10px; font-size: 2em;">CA</span> <span style="position: absolute; top: 10px; right: 10px; font-size: 2em;">7</span> <p style="text-align: center;"> <b>Diethylbenzene purity test.</b> Wojciech Swietoslowski.  <i>Przemysl Chem.</i> 26, 149-53(1947).—The purity of ethyl-  benzene cannot be distd. accurately by its b.p. During  the heating, particularly when air is not excluded from the  app., there is some oxidation of the sample and the products  formed cause rise in the b.p. Two methods of calcg. the  quantity of diethylbenzene present from the relationship  between the percentage of sample distd. and the rise in  b.p. are given but when 0.580% was added one method  gave 0.507% and the other 0.501%. J. S. </p> </div>																																																			
<div style="display: flex; justify-content: space-between;"> <div> <p>ASS-SEA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>1200: 510: 1.0</p> </div> <div> <p>1200: 510: 1.0</p> </div> </div>																																																			



100 AND 1TH CARD

PACKED AND PROTECTED INFO

2

Michał Chorąb. Wojciech Świątosławski. *Przełom*  
Kłom. O. 2001 7(1048). An obituary with portrait and  
bibliography. Adam Szczęsny

ASB-SLA DETAILING LITERATURE CLASSIFICATION

100 AND 1TH CARD

COMMON ELEMENTS		PROCESS AND PROPERTIES INDEX		COMMON VARIANTS INDEX	
B C				C 2 Y	
<p>534. Dilatometric cryometer. W. Swietoslowski. (<i>Bull. Int. Acad. Polon. Sci.</i>, 1948, No. 7-10, 113-136).—General modified forms of a dilatometric cryometer are described which enable changes in vol. (and thus relative amounts of solid and liquid) and in temp. to be followed during partial or complete freezing or melting of a substance. The cryometer can also be used for determining the purity of substances by accurate l.p. determinations. Samples of impure benzene (0.00%, 0.08, and 0.16% of impurity) are examined and m.p. differences compared with those for 100% pure benzene by calculation. R. A. Cusswell.</p>					
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>					
SECTION 1		SECTION 2		SECTION 3	
SECTION 4		SECTION 5		SECTION 6	



1ST AND 2ND COVER										3RD AND 4TH COVER									
PROCEDURES AND PROPERTIES INDEX																			
<div style="font-size: 2em; font-weight: bold;">C A</div>					<p><b>Dilatometric cryometer.</b> W. Schindler. <i>Bull. intern. acad. polon. sci., Classe sci. math. nat.</i> 10A, 113-26 (1940); cf. C.A. 43, 4800r. — Several modifications of the cryometer are described and illustrated, and purity determinations of C.H.<sub>4</sub> in it are discussed. Ernst M. Cohn</p>														
<div style="display: flex; justify-content: space-between;"> <span>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</span> <span>PROPERTY INDEX</span> </div>																			
FROM SYNTHESE										FROM ANALYSIS									
SECOND HALF ONLY ONE										FIRST HALF ONLY ONE									
P. 1										P. 2									

1ST AND 2ND SERIES		POSTERS AND POSTERIES INDEX		3RD AND 4TH SERIES	
<div style="position: absolute; top: 10px; left: 10px; font-size: 2em;">c A</div> <div style="position: absolute; top: 10px; right: 10px; text-align: right;">2</div> <div style="position: absolute; top: 200px; left: 300px;"> <p>Binary eutectics formed by two series of homologs.  W. Swietniewski. <i>Kocinski Chem.</i> 23, 1-8(1940).—A  discussion of purification by crystn. with diagrams of the  formation of eutectics between members of two homologous  series.  H. H. Namant</p> </div>					
<div style="display: flex; justify-content: space-between;"> <span>550-560 METALLURGICAL LITERATURE CLASSIFICATION</span> <span>6-27-52-12-12</span> </div>					
<div style="display: flex; justify-content: space-between;"> <span>10000 SYMBOLS</span> <span>→</span> </div>		<div style="display: flex; justify-content: space-between;"> <span>10000 SYMBOLS</span> <span>→</span> </div>		<div style="display: flex; justify-content: space-between;"> <span>10000 SYMBOLS</span> <span>→</span> </div>	
<div style="display: flex; justify-content: space-between;"> <span>10000 SYMBOLS</span> <span>→</span> </div>		<div style="display: flex; justify-content: space-between;"> <span>10000 SYMBOLS</span> <span>→</span> </div>		<div style="display: flex; justify-content: space-between;"> <span>10000 SYMBOLS</span> <span>→</span> </div>	

CA

Binary solid solutions formed by a series of homologs with one component. W. Szykielowski. *Rozprawy Chem.* 23, 7-12(1949).--A discussion of the formation of solid solns. between a solvent and members of a homologous series.  
H. H. Semant

ASH-11A METALLURGICAL LITERATURE CLASSIFICATION

10

CA

The quaternary azeotrope *n*-heptane-benzene-ethanol-water. I. W. Świątosławski and K. Zieborak (Central Inst. Ind. Chem. Research, Warsaw). *Bull. intern. acad. polon. sci., Classe sci. math., et nat. Ser. A*, 1950, 9-12 (in English).—The quaternary azeotrope,  $C_7H_{16}(I)-C_6H_6(II)-EtOH(III)-H_2O(IV)$ , b.  $64.79^\circ$ , contained 62.4 I, 12.1 II, 18.7 III, and 6.8 wt.-% IV and consisted of 2 phases: the lower,  $d_4^{20} 0.8772$ ,  $n_D^{20} 1.3789$ , was 17.2 vol.-% or 17.85 wt.-% at  $20^\circ$  of the total and contained 11.8 I, 0.9 II, 54.4 III, and 32.9 wt.-% IV; the upper,  $d_4^{20} 0.8385$ ,  $n_D^{20} 1.4640$ , contained 73.5 I, 14.5 II, 11.0 III, and 1.0 wt.-% IV. The quaternary azeotrope was detd. by filling a differential ebulliometer with the lower-boiling ternary azeotrope (I-III-IV) and adding small amts. of the higher-boiling ternary azeotrope (II-III-IV), detg. the boiling and condensation temp., and plotting against the compn. of the mixt. II. The quaternary azeotrope was also prepd. by distn. II. The quaternary azeotrope benzene-ethanol-water-isooctane. *Ibid.* 13-14.—The quaternary azeotrope, I-isooctane (V)-III-IV, b.  $64.69^\circ$ , contained 61.4 I, 14.1 V, 17.7 III, and 6.7 wt.-% IV and consisted of 2 phases: the lower,  $d_4^{20} 0.8766$ ,  $n_D^{20} 1.3782$ , was 17.0 vol.-% or 17.80 wt.-% of the total at  $20^\circ$  and contained 11.5 I, 1.2 V, 54.6 III, and 32.7 wt.-% IV; the upper,  $d_4^{20} 0.8293$ ,  $n_D^{20} 1.4505$ , contained 72.2 I, 17.0 V, 9.9 III, and 0.9 wt.-% IV. III. The quaternary azeotrope composed of benzene, ethanol, water, and cyclohexane. K. Zieborak. *Ibid.* 15-18.—The quaternary azeotrope, I-III-IV-cyclohexane (VI), b.  $62.19^\circ$ , contained 54.0 VI, 21.5 I, 17.4 III, and 7.1 wt.-% IV. IV. Tangent and nearly tangent isobars limiting the formation of two-, three-, and four component azeotropes. W. Świątosławski. *Ibid.* 19-28.—By use of the isobar curves of an azeotropic agent, A, with a series of homologs,  $B_1, B_2, B_3, \dots, B_n$  (cf. *Ebulliometric Measurements*, 1945, p. 115 (C.A. 39, 2682)),

the azeotropic range is defined as the extreme b.p. limits of the corresponding homologs which form tangent or nearly tangent isobars (i.e., the upper and lower limits of azeotropy). The formation of ternary azeotropes of A and C with a series of homologs,  $B, B_1, B_2$ , etc., or their isomers, depends upon the smaller azeotropic range of A with  $B$ 's and C with  $B$ 's, although the ternary azeotrope range may be somewhat larger than the smaller binary azeotrope range by virtue of the nearly tangent isobars of the binary system. The formation of quaternary azeotropes is limited by the azeotropic capacity of the binary systems (A with  $B$ 's, having the smallest range; all 3 agents (A, C, and D) should form azeotropes with each other and with the series of homologs ( $B, B_1, B_2$ , etc.) within a certain range; the quaternary azeotrope range may be somewhat larger than the smallest binary range by virtue of nearly tangent isobars of the binary system. In a similar manner, it is concluded that a 5-component azeotrope might exist, although the probability of such formation is small, and its isolation would be difficult since the azeotropic depression with respect to the low-

over

est-boiling quaternary azeotrope would be small. V. Nearly tangent zeotropes and their influence on the formation of ternary and quaternary azeotropes and zeotropes. W. Świątosławski. *Ibid.* 29-33.—In the distn. of I with a small amt. of hydrocarbons, b. 93-100°, the temp. vs. compn. curve has one section corresponding to the formation of nearly tangent binary azeotropes, a transition point from nearly tangent azeotropes to nearly tangent zeotropes, and a section representing the distn. of the zeotropes. If to the ternary azeotrope, I-III-IV, b. 64.85°, is added gasoline (contg. mostly isomeric heptanes and octanes), b. 93-100°, distn. will yield the quaternary azeotrope and the ternary azeotrope, and a somewhat similar distn. curve is obtained. Thus, there is a similarity between the distn. of binary tangent and nearly tangent azeotropes and zeotropes and the distn. of a complicated polycomponent system. The following rule was deduced: If substance B forms with 1 part of a homologous series nearly tangent azeotropes and with another nearly tangent zeotropes, the addn. of a 3rd or 4th azeotropic component leads to the formation of ternary or quaternary azeotropes, resp., whose boiling-temps. differ slightly from each other. These mixts. of ternary or quaternary azeotropes or zeotropes cannot be sepd. by practical distn. Also in *Roczniki Chem.* 25, 88-113(1951).  
Herman Skolnik



Swietoslawski W.

Swietoslawski W. "On the Classification of Sorbents and Ion-Exchangers."  
(W sprawie klasyfikacji sorbentow i jonitow). Przemysl Chemiczny, No. 1, 1950,  
pp. 41-43.

The author suggests a classification of sorbents and ion-exchangers into: perfect and imperfect groups. To the first belong all sorbents and ionites with one single function, while the other comports those which, in addition to being sorbents also play the part of ionites and vice versa. A suggestion is made to divide ionites into one-, two-, three-, and multi-function groups. The swelling of ionites interferes to some degree with the proposed grouping. There follows a characterization of the secondary processes occurring on non-ideal sorbents and ion-exchangers. A number of Polish terms are proposed for practical use.

SO: Polish Technical Abstracts - No. 2, 1951

CA

2

Classification of sorbents and ion exchangers. W. Swietoslowski. *Przemysl Chemic.* 8, (29), 41-3(1930).  
A classification of sorbents and ion exchangers is suggested which divides them into two groups: ideal and nonideal sorbents and ionites (ion exchangers). All sorbents and ionites which are characterized by one function only (i.e., sorbents possess adsorption capacity and ionites the ability of ion exchange) are classified in the first group. On the other hand, the nonideal sorbents comprise those which possess either acidic or basic groups or have them absorbed or adsorbed. In both cases the sorbents take part in the ion-exchange process. The ionites may possess the ability of adsorption or absorption of mols. from the soln. and therefore may act as ion exchangers as well as sorbents. It is suggested that the phenomena of swelling of ionites and of some sorbents (as wood, with the absorption of relatively large quantities of  $H_2O$ ) does not interfere with the proposed classification. If sorption of other mols. in addn. to the solvent takes place, the nonideal nature should be stressed. The term chromatography should be retained, though selective adsorption is a more reasonable term. It is suggested that the ionite is in equil. with the soln. when the compn. of the effluent is the same as that of the influent.  
Frank Conet

P. T. R.

*Chemistry & Chemical Technology*

708

541.12.017.3 : 541.123.01

Swieteslawski W., Zieborak K. Quaternary Azeotrope Composed of Ethanol-Benzene-Water and Normal Heptane.

„O azotropie czterokomponentowym utworzonym z benzenu, etanolu, wody i n-heptanu”. *Przemysł Chemiczny*. No. 7-8, 1950, pp. 420, 2 tabs.

Quaternary azeotrope composed of ethanol-benzene-water and normal heptane has been obtained. It has been characterized by boiling temperature 64.78°C and by the following percentage weight composition: benzene 62.4, ethanol 18.7, water 6.8 and normal heptane 12.1. Composition, densities and the refractive indexes of both the lower and the upper phases are given. The percentage volume of the lower phase at 20°C is 17.2, which corresponds to 17.85 percent of the percentage weight.

P.T.A.

*Chemistry + Chemical Technology*

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Świątowski W., Zięborak K. Quaternary Azeotrope Composed of Benzene-Ethanol-Water and Isooctane.

„O azotropie czteroskładnikowym utworzonm z izooktanu, etanolu, wody i benzenu”. *Przemysł Chemiczny* No 7 - II, 1950, pp. 420-421, 2 tabs.

The existence of the quaternary heteroazeotrope composed of benzene — ethanol — water and isooctane (2,2,4 -- trimethyl-pentane) has been demonstrated. The boiling point of the heteroazeotrope at one atmosphere 64.63°C, and the percentages weight composition are as follows: benzene 61.5%, ethanol 17.7%, water 6.7% and isooctane 14.1%. The densities and the refractive indexes of both the liquids have also been determined.